WM-32/33/43

SERVICE MANUAL

WM-32:
AEP Model
WM-33:
AEP Model
UK Model
WM-43:
US Model

'AK 16

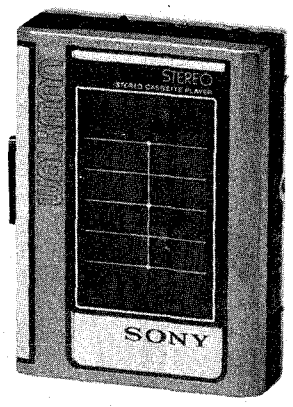


PHOTO: WM-32

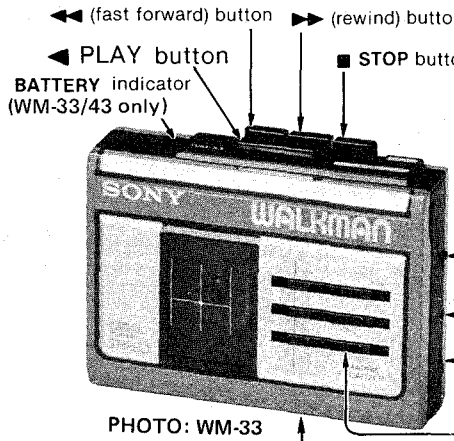


PHOTO: WM-33

SPECIFICATIONS

Similar Mechanism Set	WM-31/41

Tape track 4-track 2-channel stereo
Fast winding time Approx. 3 min. 20 sec. with Sony C-60 cassette
Frequency response
40-14,000 Hz (with the tape selector set to CrO_2/METAL)
40-14,000 Hz (with the tape selector set to NORMAL)
Power output 15 mW + 15 mW at DC operation (at 10% harmonic distortion) load impedance 32 ohms
Power requirements
3 V DC
Two IEC designation R6 (size AA) batteries
External batteries (used in the optional Sony EBP-500 battery case): two IEC designation R20 (size D) batteries
DC IN 3 V jack accepts:
optional Sony AC-D2 AC power adaptor
optional Sony DCC-70 car battery cord for use on 12 V car battery

Battery life

Batteries	Continuous playback hours
Sony SUM-3(NS) New Super batteries	Approx. 4
Sony AM3 alkaline batteries	Approx. 8

For maximum performance we recommend the use of alkaline batteries.

Dimensions
WM-32 : Approx. 88.1 × 120 × 33.5 mm (w/h/d) ($3\frac{1}{2} \times 4\frac{3}{4} \times 1\frac{3}{8}$ inches)
WM-33/43 : Approx. 120 × 88.1 × 35.2 mm (w/h/d) ($4\frac{3}{4} \times 3\frac{1}{2} \times 1\frac{7}{16}$ inches)
not incl. projecting parts and controls

Weight
WM-32 : Approx. 215 g (7.6 oz)
WM-33/43 : Approx. 220 g (7.8 oz)
incl. batteries, not incl. other accessories

Accessories supplied Stereo headphones (open-air type, 1)
Belt clip (1)

MICROFILM

STEREO CASSETTE PLAYER

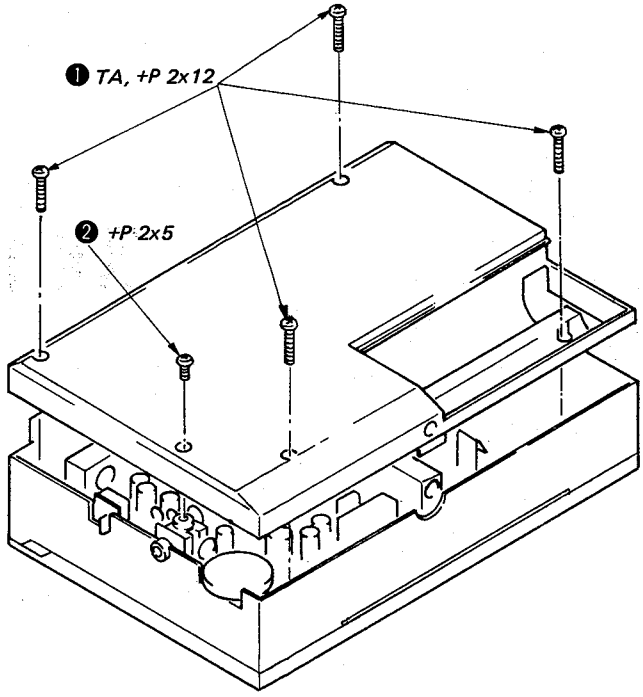
SONY®

TC

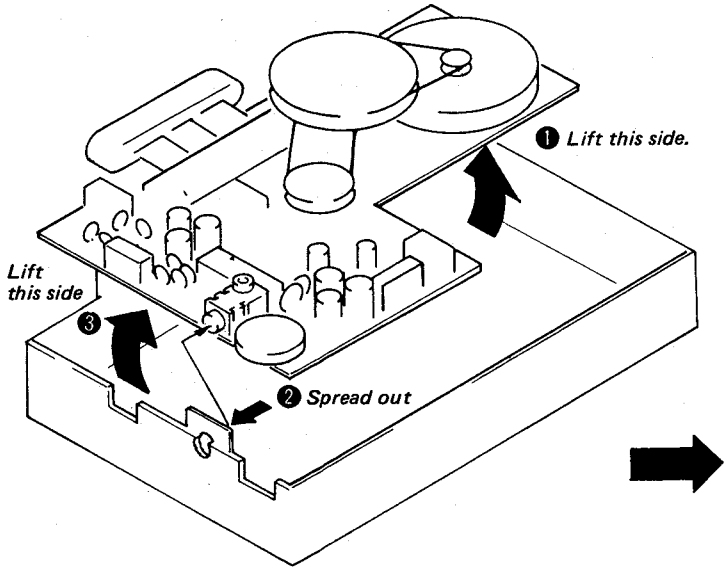
SECTION 1
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

CABINET (REAR) REMOVAL



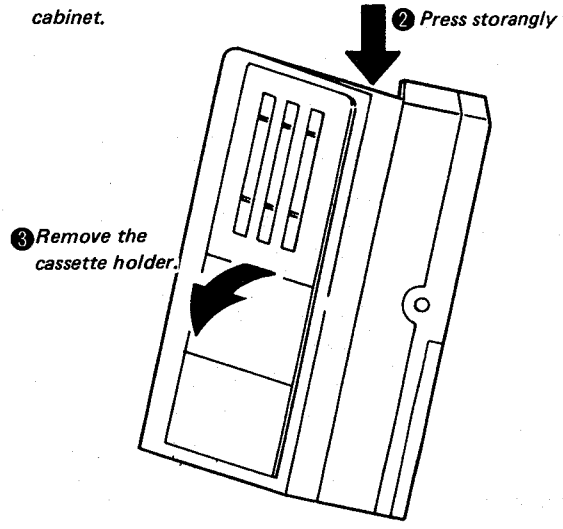
MAIN BOARD & TRANSPORT MECHANISM REMOVAL



CASSETTE HOLDER REMOVAL

* Serial number less than 235,601. (WM-33:AE)
* Serial number less than 77,001. (WM-33:UK)

It is possible to do this process without remove rear cabinet.

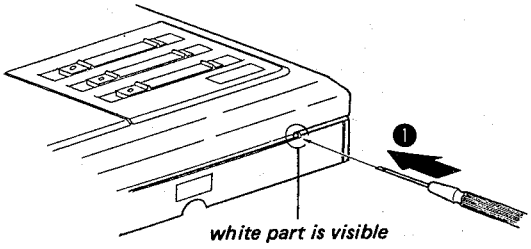


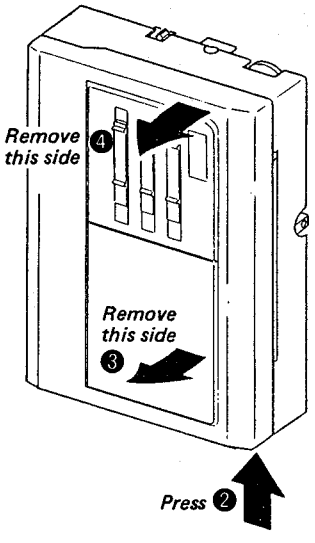
❶ *Stand the cabinet aslant on solid object like a desk and so on.*

CASSETTE HOLDER REMOVAL

* WM-43
* Serial number less than 235,601 and later. (WM-33:AE)
* Serial number less than 77,001 and later. (WM-33:UK)

❶ *Prick a thin driver into the gap between the cabinet and the cassette holder. (Cassette holder stopper is off with a click)*





SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   playback head pinch roller
   capstan
   rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	22-45g•cm (0.3-0.63oz•inch)	CQ-102C
Fast Forward	55-150g•cm (0.77-2.1oz•inch)	CQ-201B
Rewind	55-150g•cm (0.77-2.1 oz•inch)	CQ-201B
Back Tension	0.5-2g•cm (0.007-0.028 oz•inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	more than 100g (3.57 oz)

2-2. ELECTRICAL ADJUSTMENTS

CASSETTE Section

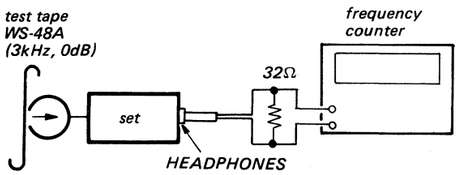
Tape Speed Adjustment

Setting:

VOL control: mechanical mid

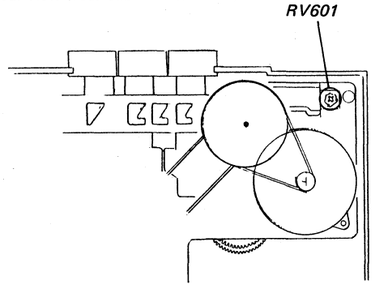
Procedure:

Mode: playback



Adjustment Location: main board

Rear view (rear cabinet removed)



Specifications:

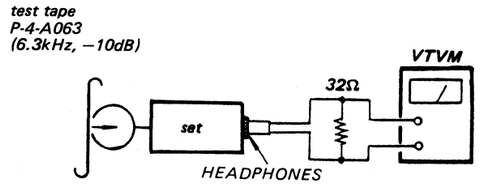
Digital frequency counter
2,990 – 3,010 Hz

Adjust RV601
Frequency difference between beginning and end of tape should be within ± 1% (30 Hz).

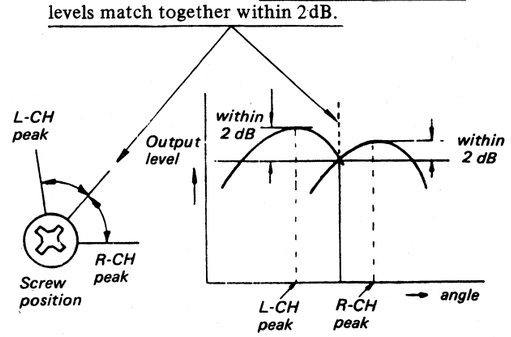
Playback Head Azimuth Adjustment

Procedure:

1. Mode: playback

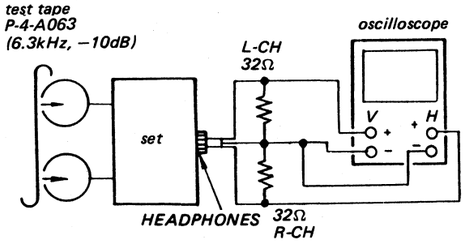


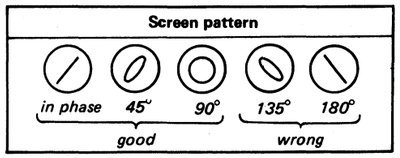
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 2dB.



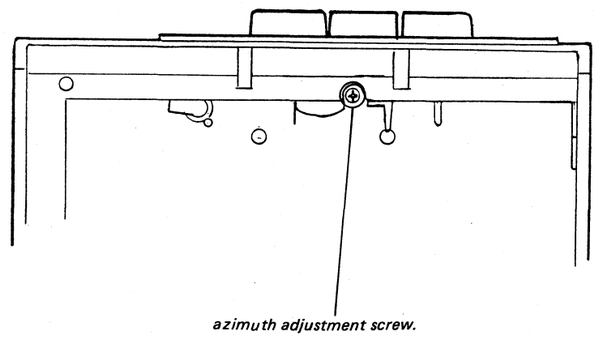
3. Phase Check

Mode: playback





Adjustment Location:



SECTION 3
DIAGRAMS

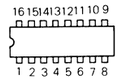
Note:

- ▭ : adjustment for repair.
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.

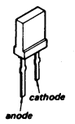
- **Semiconductor Lead Layouts**

AN6650-LF

LA4570



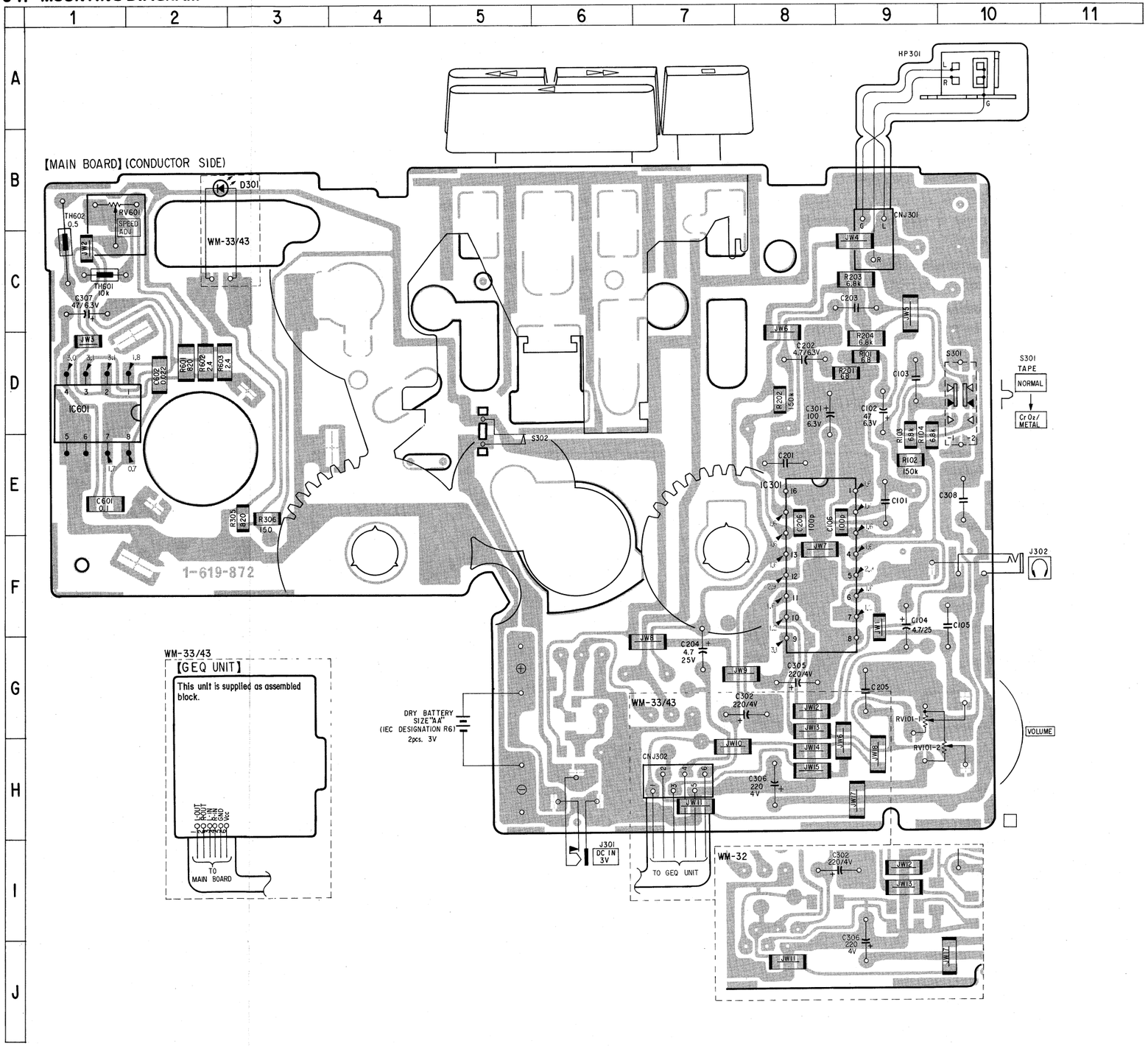
SLP162B



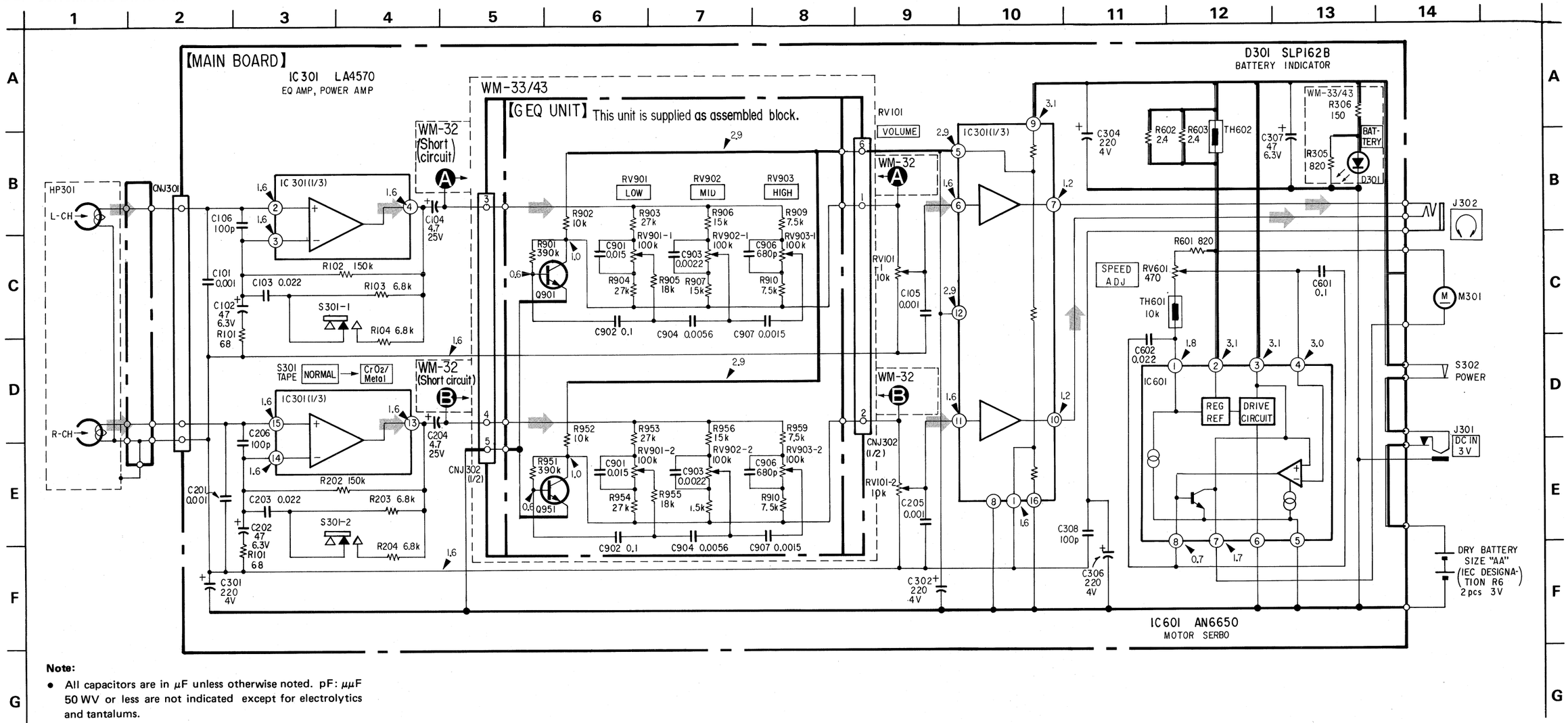
●SEMICONDUCTOR LOCATION

Ref.No.	Location
IC301	F-8
IC601	D-1
D301	B-3

3-1. MOUNTING DIAGRAM



3-2. SCHEMATIC DIAGRAM



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8W or less unless otherwise specified.
- ▨ : signal path.
- **Switch**

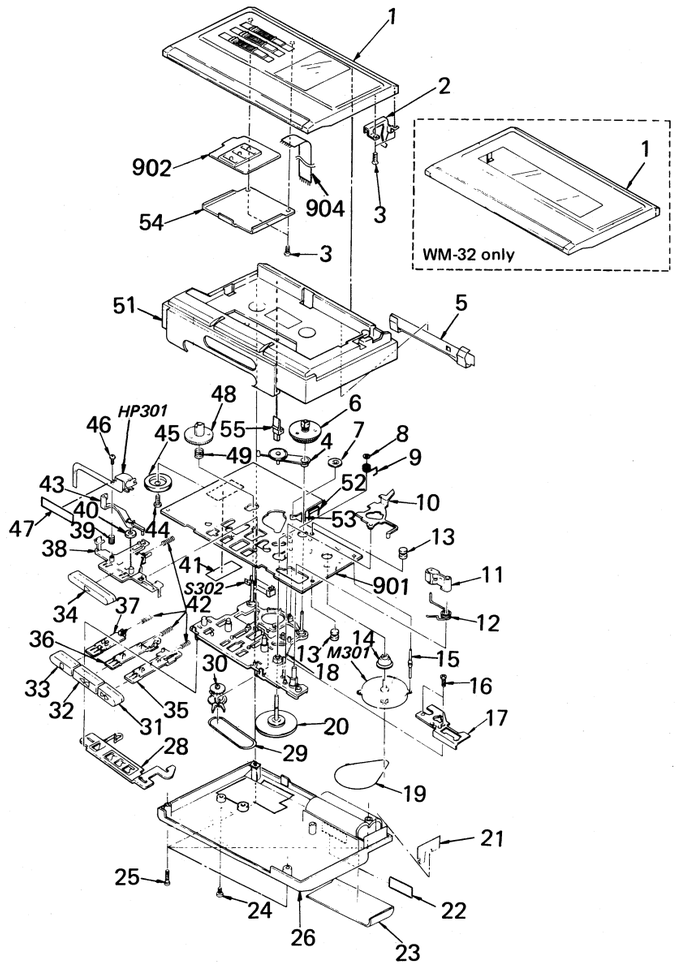
Ref. No.	Switch	Position
S301	TAPE	NORMAL
S302	POWER	OFF

- ▬ : B+ bus.
- ▭ : adjustment for repair.
- Power voltage is 3.1V and fed with from dry battery. Voltages are dc with respect to ground in ▶(PLAY) mode with VOM (DC 50K Ω/V). Voltage variations may be noted due to normal production tolerances.

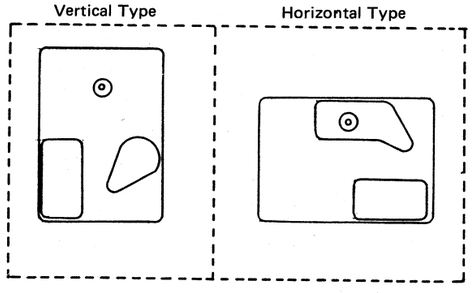
WM-32/33/43

SECTION 4
EXPLODED VIEW

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.



There are two types of the rear cabinet (26 in the figure).
When replacing it, the horizontal type should be taken.



No.	Part No.	Description	Remarks
1	X-3334-003-3	(WM-33/43:BLACK)....HOLDER ASSY, CASSETTE	
	X-3336-401-3	(WM-33/43:RED).....HOLDER ASSY, CASSETTE	
	X-3336-402-3	(WM-33/43:SILVER)...HOLDER ASSY, CASSETTE	
	X-3336-403-3	(WM-33/43:BLUE).....HOLDER ASSY, CASSETTE	
	3-334-081-01	(WM-32 : BLACK).....HOLDER (TC-V), CASSETTE	
	3-334-081-11	(WM-32 : SILVER).....HOLDER (TC-V), CASSETTE	
	3-334-081-21	(WM-32 : RED).....HOLDER (TC-V), CASSETTE	
2	3-335-661-01	STOPER, HOLDER	
3	3-318-382-01	SCREW, 1.7X3 TAPPING	
4	X-3334-007-1	GEAR ASSY, PLAY	
5	3-334-058-01	SPRING, CASSETTE	
6	X-3334-006-1	TABLE ASSY, REEL, TAKE-UP	
7	3-334-089-01	GEAR, FF	
8	3-321-483-11	RING, RETAINING	
9	*3-336-705-02	SPRING, GROUND	
10	3-335-613-01	LEVER (A), SHUT-OFF	
11	X-3334-005-1	PINCH ROLLER ASSY	
12	3-335-608-01	SPRING, PINCH ROLLER	
13	3-335-652-00	MOTOR CUSHION (C)	
14	3-335-653-00	MOTOR CUSHION	
15	3-335-942-00	MOTOR CUSHION (B)	
16	3-894-748-01	SCREW B 1.4X2.5 TAPPING	
17	*3-335-667-01	SPACER, GUIDE	
18	*X-3334-019-1	BASE ASSY, GUIDE	
19	3-334-412-01	BELT, CAPSTAN	
20	X-3334-009-1	FLYWHEEL ASSY	
21	3-334-057-01	TERMINAL BOARD, RELAY	
22	3-330-644-00	LABEL, SERIAL NUMBER (PRINTER)	
23	3-334-063-01	(BLACK)....LID, BATTERY CASE	
	3-334-063-11	(SILVER)...LID, BATTERY CASE	
	3-334-063-21	(RED).....LID, BATTERY CASE	
	3-334-063-31	(BLUE).....LID, BATTERY CASE	
24	3-335-641-01	SCREW (M2)	
25	3-335-640-01	SCREW (M2) TP	
26	X-3334-055-1	(WM-33/43 : BLACK).....CABINET (REAR) (TC-N, H) ASSY B	
	X-3334-056-1	(WM-33/43 : SILVER).... CABINET (REAR) (TC-N, H) ASSY S	
	X-3334-057-1	(WM-33/43 : RED).....CABINET (REAR) (TC-N, H) ASSY R	
	X-3334-058-1	(WM-33/43 : BLUE).....CABINET (REAR) (TC-N, H) ASSY L	
	X-3334-059-1	(WM-32 : BLACK).....CABINET (REAR) (TC-N) ASSY B	
	X-3334-060-1	(WM-32 : SILVER)..... CABINET (REAR) (TC-N) ASSY S	
	X-3334-061-1	(WM-32 : RED).....CABINET (REAR) (TC-N) ASSY R	
	X-3334-062-1	(WM-32 : BLUE).....CABINET (REAR) (TC-N) ASSY L	
28	*3-335-618-01	PLATE, LOCK, BUTTON	
29	3-335-604-01	BELT, MIDWAY	
30	X-3334-008-1	GEAR ASSY, MIDWAY	
31	3-334-059-01	BUTTON, FF	
32	3-334-060-01	BUTTON, REW	
33	3-334-061-01	BUTTON, STOP	
34	3-334-062-01	BUTTON, PLAY	
35	3-335-611-01	LEVER, FF	
36	3-335-610-01	LEVER, REW	
37	3-335-609-01	LEVER, STOP	
38	3-334-080-01	CHASSIS, HEAD	
39	3-334-078-01	SPRING (AZIMUTH), COMPRESSION	
40	3-335-683-01	WASHER, TO.075	
41	3-568-428-01	SPACER T 1.5	
42	3-335-605-01	SPRING, COMPRESSION	
43	3-334-079-01	LEVER (B), SHUT-OFF	
44	3-703-502-41	SCREW, PTPWH +1.4X3.5 (TYPE1)	
45	3-334-056-01	KNOB (TC), VOLUME	
46	7-685-781-04	SCREW +PTT 2X4 (S)	
48	3-335-612-01	GEAR, SUPPLY REEL	
49	3-335-602-01	SPRING, COMPRESSION	
51	X-3334-063-1	CABINET ASSY (TC-GEQ)	
	X-3334-064-1	CABINET ASSY (TC-GEQ)	
	X-3334-065-1	CABINET ASSY (TC-GEQ)	
52	3-334-055-01	TERMINAL BOARD, MINUS	
53	3-334-054-01	TERMINAL BOARD, PLUS	
54	3-334-083-01	COVER, GEQ (TC)	
55		STOPPER, CASSETTE HOLDER	
901	A-3015-447-A	PC BOARD ASSY, MAIN	
●902	1-414-647-11	GRAPHIC EQUALIZER UNIT	
904	1-558-826-11	FLEXIBLE BOARD	
M301	8-835-186-01	MOTOR, DC HHN-2A3RA	
HP301	1-543-339-11	HEAD, MAGNETIC (PLAYBACK)	
S302	1-570-549-11	SWITCH, LEAF (POWER)	

● GEQ unit is supplied as assembled block.

SECTION 5
ELECTRICAL PARTS LIST

NOTE:
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	*A-3015-447-A	PC BOARD ASSY, MAIN			
●902	1-464-647-11	GRAPHIC EQUALIZER UNIT			
904	1-558-826-11	FLEXIBLE BOARD			
C101	1-161-039-00	CERAMIC	0.001MF	10%	25V
C102	1-123-647-00	ELECT	47MF	20%	6.3V
C103	1-161-055-00	CERAMIC	0.022MF	10%	25V
C104	1-123-616-00	ELECT	4.7MF	20%	25V
C105	1-102-074-00	CERAMIC	0.001MF	10%	50V
C106	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C201	1-161-039-00	CERAMIC	0.001MF	10%	25V
C202	1-123-647-00	ELECT	47MF	20%	6.3V
C203	1-161-055-00	CERAMIC	0.022MF	10%	25V
C204	1-123-616-00	ELECT	4.7MF	20%	25V
C205	1-102-074-00	CERAMIC	0.001MF	10%	50V
C206	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C301	1-123-661-00	ELECT	100MF	20%	6.3V
C302	1-123-827-00	ELECT	220MF	20%	4V
C304	1-123-827-00	ELECT	220MF	20%	4V
C306	1-123-827-00	ELECT	220MF	20%	4V
C307	1-123-647-00	ELECT	47MF	20%	6.3V
C308	1-102-973-00	CERAMIC	100PF	5%	50V
C601	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C602	1-163-063-00	CERAMIC CHIP	0.022MF	10%	50V
CNJ301	*1-563-350-11	CONNECTOR, F.P.C 3P			
D301	8-719-915-45	DIODE SLP162B			
HP301	1-543-339-11	HEAD, MAGNETIC (PLAYBACK)			
IC301	8-759-802-85	IC LA4570			
IC601	8-759-403-65	IC AN6650-LF			
J301	1-507-723-00	JACK (EXTENTION POWER)			
J302	1-563-316-11	JACK (HEADPHONES)			
JW1	1-216-295-00	METAL CHIP	0	5%	1/10W
JW2	1-216-295-00	METAL CHIP	0	5%	1/10W
JW3	1-216-295-00	METAL CHIP	0	5%	1/10W
JW4	1-216-296-00	METAL CHIP	0	5%	1/8W
JW5	1-216-296-00	METAL CHIP	0	5%	1/8W
JW6	1-216-296-00	METAL CHIP	0	5%	1/8W
JW7	1-216-296-00	METAL CHIP	0	5%	1/8W
JW8	1-216-296-00	METAL CHIP	0	5%	1/8W
JW9	1-216-296-00	METAL CHIP	0	5%	1/8W
JW10	1-216-296-00	METAL CHIP	0	5%	1/8W
JW11	1-216-296-00	METAL CHIP	0	5%	1/8W
JW12	1-216-296-00	METAL CHIP	0	5%	1/8W
JW13	1-216-296-00	METAL CHIP	0	5%	1/8W
JW14	1-216-296-00	METAL CHIP	0	5%	1/8W
JW15	1-216-296-00	METAL CHIP	0	5%	1/8W
JW16	1-216-296-00	METAL CHIP	0	5%	1/8W
JW17	1-216-296-00	METAL CHIP	0	5%	1/8W
JW18	1-216-296-00	METAL CHIP	0	5%	1/8W
M301	8-835-186-01	MOTOR, DC HHN-2A3RA			
R101	1-216-021-00	METAL CHIP	68	5%	1/10W
R102	1-216-101-00	METAL CHIP	150K	5%	1/10W
R103	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R104	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R201	1-216-021-00	METAL CHIP	68	5%	1/10W
R202	1-216-101-00	METAL CHIP	150K	5%	1/10W
R203	1-216-218-00	METAL CHIP	6.8K	5%	1/8W
R204	1-216-218-00	METAL CHIP	6.8K	5%	1/8W
R305	1-216-047-00	METAL CHIP	820	5%	1/10W
R306	1-216-029-00	METAL CHIP	150	5%	1/10W
R601	1-216-196-00	METAL CHIP	820	5%	1/8W
R602	1-216-135-00	METAL CHIP	2.4	5%	1/8W
R603	1-216-135-00	METAL CHIP	2.4	5%	1/8W
RV101	1-230-485-11	RES, VAR, CARBON 10K/10K (VOLUME)			
RV601	1-237-130-11	RES, ADJ, CARBON 470 (SPEED ADJ)			
S301	1-570-659-11	SWITCH, SLIDE (TAPE SELECT)			
S302	1-570-549-11	SWITCH, LEAF (POWER)			
TH601	1-807-488-11	THERMISTOR (POSITIVE)			
TH602	1-807-489-11	THERMISTOR (POSITIVE)			

ACCESSORY & PACKING MATERIAL

Part No.	Description
3-336-701-01	(WM-43 ONLY)...CUSHION (A)
3-336-722-01	INDIVIDUAL CARTON
3-336-730-01	(WM-43)....CUSHION (B)
3-336-755-01	(WM-32)....CUSHION (B)
3-336-763-01	(WM-33)....CUSHION (B)
3-336-764-01	SHEET, PROTECTION
3-527-213-00	LABEL, SERIAL NUMBER
3-701-622-00	BAG, POLYETHYLENE
3-703-710-01	STICKER, SONY SYMBOL (12)
3-765-280-51	(WM-32).....MANUAL, INSTRUCTION
3-765-367-11	(COM).....MANUAL, INSTRUCTION
3-765-367-21	(WM-43).....MANUAL, INSTRUCTION
3-765-367-41	(WM-33:UK)...MANUAL, INSTRUCTION
3-795-748-21	(WM-43 ONLY) ...SAFETY INSTRUCTIONS, HEADPHONE
8-952-268-90	HEADPHONE MDR-010L SET
X-3334-010-1	CASE ASSY, CARRYING

● GEQ unit is supplied as assembled block.

9-952-402-11

Sony Corporation

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